

WHAT IS CLAIMED IS:

1. A method of constructing wireless telecommunication cells between base stations and subscriber stations, the base stations each having a cell, the cell having a predetermined number of sectors, comprising the steps:
  - 5        dividing each of the cells into four sectors around each of the base stations;
  - assigning distinct communication signals respectively to the four sectors at each of the base stations so that a common one of the distinct communication signals is assigned to at least a pair of adjacent ones of the sectors of the corresponding two adjacent ones of the cells; and
  - 10      transmitting the assigned distinct communication signals in each of the four sectors between the base stations and the subscriber stations in the corresponding cells.
2. The method of constructing wireless telecommunication cells according to claim 1 wherein the subscriber stations are fixedly located in a predetermined one of the sectors in  
15        a predetermined direction with respect to the base stations.
3. The method of constructing wireless telecommunication cells according to claim 1 wherein the sectors are substantially equal four areas.
- 20        4. The method of constructing wireless telecommunication cells according to claim 1 wherein the sectors are substantially rectangular in shape.
5. The method of constructing wireless telecommunication cells according to claim 1 wherein the sectors are substantially square in shape.
- 25        6. The method of constructing wireless telecommunication cells according to claim 5 wherein the cells are substantially square in shape.
7. The method of constructing wireless telecommunication cells according to claim 6  
30        wherein the cells are staggered with each other.
8. The method of constructing wireless telecommunication cells according to claim 1

wherein the sectors are substantially triangular in shape.

9. The method of constructing wireless telecommunication cells according to claim 8  
wherein the sectors are substantially equal four areas.

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10. The method of constructing wireless telecommunication cells according to claim 9  
wherein the cells are substantially square in shape.

11. The method of constructing wireless telecommunication cells according to claim 1  
10 wherein a number of the distinct communication signals is four.

12. The method of constructing wireless telecommunication cells according to claim 1  
wherein the common one of the distinct communication signals is respectively assigned to  
two pairs of two adjacent sectors of the corresponding two adjacent cells.

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13. The method of constructing wireless telecommunication cells according to claim 12  
wherein the common one of the distinct communication signals is assigned to four adjacent  
sectors of the corresponding four adjacent cells

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14. The method of constructing wireless telecommunication cells according to claim 1  
wherein the distinct communication signals are each a combination of distinct frequencies  
and distinct communication wave directionalities.

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15. The method of constructing wireless telecommunication cells according to claim 14  
wherein two of the distinct communication signals are assigned to each of the sectors.

16. The method of constructing wireless telecommunication cells according to claim 1  
wherein the distinct communication signals are four distinct frequencies as denoted by F1,  
F2, F3 and F4.

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17. The method of constructing wireless telecommunication cells according to claim 16  
wherein the four distinct frequencies have a relation as defined by  $F1 < F2 < F3 < F4$ .

18. The method of constructing wireless telecommunication cells according to claim 16 wherein the four distinct frequencies have a relation as defined by  $F_1 > F_2 > F_3 > F_4$ .
- 5    19. The method of constructing wireless telecommunication cells according to claim 1 wherein the four frequencies are assigned in order of  $F_1, F_4, F_2$  and  $F_3$  to the sectors of the cell.
- 10    20. The method of constructing wireless telecommunication cells according to claim 19 wherein the four frequencies  $F_1, F_4, F_2$  and  $F_3$  are assigned to the sectors in a clockwise direction.
- 15    21. The method of constructing wireless telecommunication cells according to claim 19 wherein the four frequencies  $F_1, F_4, F_2$  and  $F_3$  are assigned to the sectors in a counterclockwise direction.
- 20    22. The method of constructing wireless telecommunication cells according to claim 19 wherein a first difference between  $F_2$  and  $F_3$  is larger than a second difference between  $F_1$  and  $F_2$  and a third difference between  $F_3$  and  $F_4$ .
23. A wireless telecommunication system, comprising:  
base stations for wirelessly communicating via a predetermined number of distinct communication signals;  
four directional antennas located around each of said base stations for receiving and transmitting the distinct communication signals for said base stations, said four directional antennas collectively defining a cell for a corresponding one of said base stations, each of said four directional antennas singularly defining a sector for the corresponding cell, at least a pair of adjacent ones of said four directional antennas of the corresponding two adjacent ones of said base stations utilizing a common one of the distinct communication signals; and  
subscriber stations located in the cell for wirelessly communicating with a corresponding one of said base stations on one of the distinct communication signals.

24. The wireless telecommunication system according to claim 23 wherein said subscriber stations are fixedly located in a predetermined one of the sectors for transmitting one of the communication signals in a predetermined direction with respect to said base stations.

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25. The wireless telecommunication system according to claim 23 wherein said directional antennas define the sectors in substantially equal four areas.

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26. The wireless telecommunication system according to claim 23 wherein said directional antennas define the sectors in substantially rectangular areas.

27. The wireless telecommunication system according to claim 23 wherein said directional antennas define the sectors in substantially square areas.

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28. The wireless telecommunication system according to claim 27 wherein said directional antennas define the cells in substantially square areas.

29. The wireless telecommunication system according to claim 28 wherein said directional antennas define the cells in staggered relations with each other.

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30. The wireless telecommunication system according to claim 23 wherein said directional antennas define the sectors in substantially triangular areas.

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31. The wireless telecommunication system according to claim 30 wherein said directional antennas define the sectors in substantially equal four areas.

32. The wireless telecommunication system according to claim 31 wherein said directional antennas define the cells in substantially square areas.

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33. The wireless telecommunication system according to claim 23 wherein a number of the distinct communication signals is four.

34. The wireless telecommunication system according to claim 23 wherein the common one of the distinct communication signals is assigned to two pairs of two adjacent sectors of the corresponding two adjacent cells.
- 5    35. The wireless telecommunication system according to claim 34 wherein the common one of the distinct communication signals is assigned to four adjacent sectors of the corresponding four adjacent cells.
- 10    36. The wireless telecommunication system according to claim 23 wherein the distinct communication signals are each a combination of distinct frequencies and distinct communication wave directionalities.
- 15    37. The wireless telecommunication system according to claim 36 wherein two of the distinct communication signals are assigned to each of the sectors.
- 20    38. The wireless telecommunication system according to claim 23 wherein the distinct communication signals are four distinct frequencies as denoted by F1, F2, F3 and F4.
39. The wireless telecommunication system according to claim 38 wherein the four distinct frequencies have a relation as defined by  $F1 < F2 < F3 < F4$ .
- 25    40. The wireless telecommunication system according to claim 38 wherein the four distinct frequencies have a relation as defined by  $F1 > F2 > F3 > F4$ .
41. The wireless telecommunication system according to claim 23 wherein the four frequencies are assigned in order of F1, F4, F2 and F3 to the sectors of the cell.
- 30    42. The wireless telecommunication system according to claim 41 wherein the four frequencies F1, F4, F2 and F3 are assigned to the sectors in a clockwise direction.
43. The wireless telecommunication system according to claim 41 wherein the four frequencies F1, F4, F2 and F3 are assigned to the sectors in a counterclockwise direction.

44. The wireless telecommunication system according to claim 41 wherein a first difference between F2 and F3 is larger than a second difference between F1 and F2 and a third difference between F3 and F4.

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45. A wireless telecommunication system, comprising:

base stations for wirelessly communicating via four distinct communication signals;

10 four directional antennas located around each of said base stations for receiving and transmitting the four distinct communication signals for said base stations, said four directional antennas collectively defining a cell for a corresponding one of said base stations, each of said four directional antennas singularly defining equal one fourth of the cell as a sector, a pair of adjacent ones of said four directional antennas of the corresponding two adjacent sectors of said base stations utilizing a common one of the four distinct 15 communication signals; and

subscriber stations located in the cell for wirelessly communicating with a corresponding one of said base stations on one of the distinct communication signals.

46. A wireless telecommunication system, comprising:

20 base stations for wirelessly communicating via four distinct communication signals;

25 four directional antennas located around each of said base stations for receiving and transmitting the four distinct communication signals for said base stations, said four directional antennas collectively defining a cell for a corresponding one of said base stations, each of said four directional antennas singularly defining equal one fourth of the cell as a sector, four of adjacent ones of said four directional antennas of the corresponding four adjacent ones of said base stations utilizing a common one of the four distinct communication signals; and

30 subscriber stations located in the cell for wirelessly communicating with a corresponding one of said base stations on one of the distinct communication signals.

47. A wireless telecommunication system, comprising:

base stations for wirelessly communicating via four distinct communication signals;

- four directional antennas located around each of said base stations for receiving and transmitting the four distinct combinations of frequencies and polarized waves for said  
5 base stations, said four directional antennas collectively defining a cell for a corresponding one of said base stations, each of said four directional antennas singularly defining equal one fourth of the cell as a sector, four of adjacent ones of said four directional antennas of the corresponding four adjacent ones of said base stations utilizing a common one of the four distinct combinations of the frequencies and polarized waves; and  
10 subscriber stations located in the cell for wirelessly communicating with a corresponding one of said base stations on one of the distinct communication signals.